

HUMBOLDT COUNTY OFFICE OF EDUCATION

COURSE OUTLINE

1. COURSE TITLE: **Cisco Computer Networking 2**

2. CBEDS TITLE: Communications Electronic

3. CBEDS NUMBER: 5556

4. JOB TITLES:

Data Communications Technician	DOT 823.261-030
Network Control Operator	DOT 031.262-014
Computer Security Coordinator	DOT 033.162-010
Computer Security Specialist	DOT 033.362-010
Manager, Computer Operations	DOT 169.167-082

5. COURSE DESCRIPTION: This is the second of two courses designed to provide students with classroom and laboratory experience in current and emerging networking technology that will empower them to enter employment and/or further education and training in the computer networking field. Content standards are based on a task analysis of current industry/occupational standards. The second half of the course (CISCO 1 and 2) includes, but is not limited to, safety, networking, networking terminology and protocols, network standards, LANs, WANs, OSI models, cabling tools, routers, router programming, star topology, IP addressing and network standards.

Particular emphasis is given to the use of decision-making and problem-solving techniques in applying science, mathematics, communication and social studies concepts to solve networking problems. In addition, instruction and training are provided in the proper care, maintenance and use of networking software, tools and equipment in all local, state and federal safety, building and environmental codes and regulations. Integrated throughout the course are career preparation standards, which include basic academic skills, communication, interpersonal skills, problem solving, safety, technology, and other employment skills.

6. HOURS OF INSTRUCTION: 180 hours

7. PREREQUISITES: Cisco Computer Networking 1.

8. DATE: October 2002

9. COURSE OUTLINE:

I. Essential Employability Skills/Career Preparation Standards

- a. Students will build a small LAN.
- b. Students will manage a small LAN, including but not limited to programming routers and switches.
- c. Students will terminate CAT-5 cable.
- d. Students will develop a network topology of a LAN and a WAN digitally.
- e. Students will work in groups problem solving.

II. Content Area Skills

A. Semester 3 – Fall Semester

WEEK CHAPTER BENCHMARKS

- 1 1 Can all students describe in detail the OSI layers? Can all students differentiate between various LAN technologies, especially the varieties of Ethernet? Can all students work through a class B IP address planning example, on their own, without notes or a calculator?
- 2 1 Can all students explain the process of routing? Can all students demonstrate an understanding of the TCS Overview? Can all students create simple HTML files?
- 3 2 Can all students explain half-duplex and full-duplex Ethernet? Can all students explain the basic operation of a switch? Can all students explain segmentation of networks by bridges, switches, and routers?
- 4 2 Can all students briefly describe VLANs and STP? Can all students perform simple hardware setup and software configuration of a switch? Have all student teams been formed and begun organizing their files and workflow for the TCS?
- 5 3 Can all students explain the theory and benefits of VLANs?
- 6 3 Can all students configure basic VLANs on a VLAN-capable switch? Have all student teams begun their first draft of the site wiring diagrams?
- 7 4 Can all students explain Layer 1, Layer 2, and Layer 3 network design?
- 8 4 Have all student teams made preliminary Layer 1, Layer 2, and Layer 3 LAN Design Choices? Has each team presented its proposed District IP addressing Scheme?
- 9 4 Have all students created physical topologies, site wiring diagrams, and logical topologies? Have all students completed the majority of the Chapter 4 TCS tasks, including the LAN Electronics and Media Lists?
- 10 5 Can all students explain the operation and metrics of IGRP?
- 11 5 Can all students migrate a router from RIP to IGRP and completely configure IGRP using appropriate IOS commands? Have students added IGRP to their TCS Design?
- 12 6 Can all students explain standard access lists? Can all students configure ACLs on a router for a variety of common permit/deny situations?
- 13 6 Can all students explain extended access lists? Can all students configure extended ACLs on a router for a variety of common permit/deny situations?
- 14 6 Can all students configure an ACL for controlling Internet traffic? Have all students added ACLs to their TCS Design?
- 15 7 Can all students address a network using IPX? Can all students configure and monitor basic IPX operations on a router? Have all students added IPX to their TCS Design?
- 16 8 Can all students explain some basic practices of network management?
- 17 - Are all student ready to take their Online, Oral, and Skills-Based Final Exams? Have all students completed the Semester 3 part of their TCS Design in electronic form?
- 18 — Online, Oral, and Skill-Based Exams?

B. Semester 4 – Spring Semester

- WEEK CHAPTER BENCHMARKS 1 1 Can all students demonstrate substantial conceptual understanding of LAN switching, VLANs, LAN Design, Routing Protocols, ACLs, and IGRP? 2 1 Can all students perform switch and router configurations relevant to switching modes, VLANs, IGRP, ACLs, and IPX? 3 2 Do all students have a working knowledge of WAN vocabulary? 4 2 Can all students explain the relevance of T1 leased lines, Frame Relay, ISDN, and PPP to the TCS? 5 3 Can all students perform simple one, two, and three-level (core, distribution, access) WAN designs? 6 3 Have all students begun applying the WAN design process introduced in Chapter 3 to their TCS? 7 3 Have all students made considerable progress on their WAN TCS tasks, including WAN user requirements document, WAN link speeds and upgrade paths, WAN traffic flow, WAN electronics and media lists, and WAN logical and physical topologies? Can all students make any necessary changes to their local router configurations? 8 4 Can all students explain the 4-phase PPP session process? Can all students add PPP, PAP, and CHAP to their local router configurations? 9 5 Have all students attained a working vocabulary of ISDN technology? 10 5 Can all students add ISDN to their local router configuration? Have all students added ISDN to their TCS? 11 6 Have all students attained a working vocabulary of Frame Relay technology? 12 6 Can all students add Frame Relay to their local router configuration? Have all students added Frame Relay to their TCS 13 7 Can all students describe WAN-related network management tasks? Are all students completing their TCS? 14 — Review for Finals; Complete Semester 4 TCS part of Electronic Portfolio 15 — Online, Oral, and Skills-Based Final Exams for Semester 4 16 9 Can all students answer any OSI-related questions and perform any IP address-related calculations that might appear on any CCNA Exam? Have all students completed a “study plan for success” on the CCNA Exam, including any Online, printed book, CD, software, simulations, or other resources for exam preparation? 17 9 Can students perform complex router configurations using any command covered in the CNAP? 18 9 Can students perform complex router configurations using any command covered in the CNAP?